

In re Application of: Halbert Tam et al.

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Group Art Unit: 3723

**Examiner: Shantese L. McDonald**


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For: STI Polish Enhancement  
Using Fixed Abrasives With  
Amino Acid Additives

**CERTIFICATE OF MAILING OR TRANSMISSION**

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January 22, 2007  
Date

  
Steven H. VerSteeg

Dear Sir or Madam:

Appellants submit this Reply Brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner of Group Art Unit 3723 dated January 12, 2006, finally rejecting claims 1-25 and 30-38. One copy of this brief is submitted for use by the Board.

## Argument

*Srinivasan et al.* discloses a one step polishing process in which glycine is present in the polishing slurry. *Srinivasan et al.* does not disclose a pre-polishing step or multiple polishing steps as the Examiner has stated (see Advisory Action dated May 24, 2006; Examiner's Answer page 5).

*Spikes, Jr.* discloses a two step polishing process. In the first polishing step, a slurry is provided to the polishing pad to remove material from a layer (see col. 8, l. 10-48). Thereafter, a second polishing step occurs. The second polishing step occurs substantially slurryless (col. 9, l. 1-19). There is no teaching to have slurry present for the second polishing step. *Spikes, Jr.* also does not teach a pre-polishing step.

The Examiner has stated that *Spikes, Jr.* teaches a pre-polishing step (Examiner's Answer page 6) and refers to the following passage in *Spikes, Jr.* "During the first polishing process, random surface variations may be removed from the pre-polish surface 122 of the first process layer 96." The passage refers to the surface of the process layer that is being polished during the first polishing step. There is no suggestion or disclosure of a pre-polishing step prior to the first polishing step.

*Spikes, Jr.* teaches two polishing steps. The first polishing step in *Spikes, Jr.* utilizes a polishing slurry to remove material and may be performed for approximately 60-90 seconds (col. 8, l. 31-35). The second polishing step is performed without polishing slurry at a removal rate less than the removal rate for the first polishing step (col. 9, l. 39-42). The second polishing step planarizes the surface that remains after the first polishing step to reduce the severity of the dishing non-uniformities that occur in semiconductor processing (col. 9, l. 51-54). The second polishing step is free of slurry and hence, permits the thicker portions to be polished without substantially polishing the portions overlying the dishing area (col. 9, l. 54-62). It stands to reason that the second polishing step need not be performed if the first polishing step effectively dealt with the dishing phenomenon.

The Examiner appears to be arguing that one of ordinary skill in the art would add a polishing step to *Srinivasan et al.* by performing a two step polishing process wherein the first polishing step is the first polishing process taught by *Spikes, Jr.* and the

second polishing step is the only polishing performed by *Srinivasan et al.* Appellants respectfully disagree that such a combination would be obvious without hindsight.

### Conclusion

The Examiner errs in finding that the combination of *Srinivasan et al.* and *Spikes, Jr.* is sufficient to reject claims 1-25 and 30-38. It is respectfully requested that the Examiner's rejection of claims 1-25 and 30-38 be reversed.

Respectfully submitted,



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